United States Patent [19]

Murai et al.

[54] **INFORMATION INPUTTING AND PROCESSING APPARATUS**

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[56]   **References Cited**

U.S. PATENT DOCUMENTS

3,693,123	9/1972	Pedersen .
3,740,744	6/1973	Nakada et al. 341/31
4,459,678	7/1984	McCaskill et al. .
4,510,583	4/1985	Walz et al. .
4,543,564	9/1985	Andoria et al. 341/24
4,704,601	11/1987	Engstrom 341/24
4,862,166	8/1989	Yamakawa 341/22
5,341,133	8/1994	Savory et al. 345/168
5,347,275	9/1994	Lau 341/31

FOREIGN PATENT DOCUMENTS

3108028	11/1983	Germany .
59-160225	10/1984	Japan .

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[57]   **ABSTRACT**

An apparatus for inputting and processing information through a keyboard comprises sensors for detecting that fingers of an operator have contacted with or approached keys on the keyboard, a signal processing device for inputting and processing the detection information from the sensors and information from switch circuits which are turned on or off upon operation of the keys on the keyboard, and a display unit for displaying the detection information from the sensors and the information from the switch circuits as information symbols, respectively, whereby a keyboard entry operation by the operator is made easy and comfortable, and, as a result, it becomes possible to prevent occurrence of a key entry error and to reduce the number of times of key operations.

2 Claims, 28 Drawing Sheets